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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/432,824	11/02/1999	ROGER PHILLIP QUAYLE	A-68101/JGW	1614

22242 7590 12/18/2002

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EXAMINER

PAN, YUWEN

ART UNIT PAPER NUMBER

2681

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/432,824

Applicant(s)

QUAYLE ET AL.

Examiner

Yuwen Pan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-12, 14 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-5, 13, 15, 20 and 21 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

Claims 1-5, 13, 20, and 21, drawn to a cellular wireless internet access

- I. system where subscriber terminals are located in buildings, base station placement and coverage, and dynamic power control, classified in class 455, subclass 522.
- II. Claims 6-12, 14, and 16-19, drawn to a cellular wireless internet access system, base station placement and coverage, bandwidth allocation using different chip rates, TDD, and time slot allocation as a function of expected traffic demand, classified in class 370, subclass 335.
- III. Claim 15, drawn to a cellular wireless internet access system, and service tiers, where allocation and scheduling of time slots is based on a subscriber's assigned service tier, polling subscribers, scheduling and queuing outbound data, classified in class 370, subclass 348.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, Invention I has separate utility such as in a cellular wireless internet access system where power control with respect to interference and data rates are employed for transmission between a base station and

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subscriber unit, unlike the Invention II, which uses time division duplexing. See MPEP § 806.05(d).

Inventions I and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, Invention III has separate utility such as a cellular wireless internet access system in which the cellular base stations are located at high to ground level, and where interference sources are not attenuated by foliage, building clutter, and terrain losses as is the case with Invention I. See MPEP § 806.05(d).

Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, Invention III has separate utility such as a cellular wireless internet access system in which the cellular base stations are located at high to ground level, and where interference sources are not attenuated by foliage, building clutter, and terrain losses as is the case with Invention II. See MPEP § 806.05(d).

2. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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3. During a telephone conversation with Steve Parmelee on September 25, 2002 a provisional election was made with traverse to prosecute the invention of Group II, claims 6-12, 14, and 16-19. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-5, 13, 15, 20, and 21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 10, 11, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The term "high" in claim 10, and lines 2, is a relative term, which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a

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standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

8. The term "small" in claim 10, and lines 3, is a relative term which renders the claim indefinite. The term "small" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

9. The term "typical" in claim 11, and lines 2, is a relative term which renders the claim indefinite. The term "typical" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

10. The term "high" in claim 12, and line 1, is a relative term which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

11. The term "maximum" in claim 12, and lines 2, is a relative term which renders the claim indefinite. The term "maximum" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 6, 7, and 14, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Widegren et al. (US006374112B1) in view of Andersson et al (US006400966B1) and Miya et al (US006351458B2).

With respect to claim 6, Widegren et al disclose a cellular wireless Internet access system (see figure 1, items 14, 20, 24 and 30) including:

A plurality of portable subscriber terminals each has a directly attached antenna for communicating in a predetermined frequency band with a predetermined nearby base station and a plurality of cellular base stations transmitting and receiving with plurality of subscriber terminals (See figure 1, item 30, 28 and column 2, line 39-44). Items 30 represents one of portable subscriber terminals has an antenna directly attached. Since it is a WCDMA system, frequency band (wide bandwidth) is predefined for each communication between terminals and nearby base station for quality of service.

For operating on a small frequency allocation obtainable anywhere within the designated frequency band using a single frequency channel varying bandwidth between 6 and 24 MHz. See column 2 and line 39-44, column 5 and line 56-58). Although Widegren et al only indicate a single frequency channel would be vary between 5 and 15 MHz, Widegren et al did indicate “ in the future, promises an even greater bandwidth”. Moreover, 5-15 MHz does fall in the range between 6-24MHz.

Widegren et al do not disclose using different spread spectrum chip rates and base station in a time division duplex mode to enable transmitting and receiving at single frequency channel.

Andersson et al disclose base station may have to support a number of chip rates. See column 2, and line 20-23. It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Andersson et al with Widegren et al such that different spread spectrum chip rates was used. One of ordinary skill in the art would have been motivated to do this to support very high user data rate in a W-CDMA system.

Miya et al disclose a CDMA wireless communication, which operates TDD. See column 2 and line 1-10. It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Miya with the combination of Widegren et al and Andersson et al. One of ordinary skill in the art would have been motivated to do this to have a same frequency for transmission and reception between base station and mobile stations without interference and increase the capacity and traffic demand.

With respect to claim 7, combination of Widegren et al, Andersson et al, and Miya et al disclosed all of the claimed limitation, as disclose in claim 6. They didn't disclose frequency band is divided in time domain into frames and each frame has a number of time slots allocated to control, uplink, and downlink communications.

The examiner takes "Official Notice" of the fact that is notoriously well-known in the art to divide frequency band in time domain into frames and each frame has a number of time slots allocated to control, uplink, and downlink communications, in order to reduce the interference during transmitting and receiving.

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, frequency band is divided in time domain into frames and each frame has a number of time slots allocated to control, uplink, and downlink communications within

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Widegren et al., Andersson et al, and Miya et al to reduce the interference during transmitting and receiving.

With respect to claim 14, a method of operating a cellular wireless Internet access system including base and subscriber stations in a regulated frequency spectrum which allows the use of one or more channels of various channel frequency bandwidths reads on Widegren et al. See figure 1, column 2, line 39-44, column 5 and line 56-58.

The position and number of the available channels in the band is inflexible for historical allocation reason to preclude spacing, the method comprising the setting, in a particular local area, of base and user stations to operate within a single chosen useable radio frequency channel; and using TDD for both transmitting and receiving on this single radio frequency channel, reads on Miya et al. See column 2, line 1-10, column 8, and line 3-13.

With respect to claim 19, with the combination of Widegren et al., Andersson et al, and Miya et al, inherently, data rate would be determined by measurements of channel delay spread and SIR and set accordingly, using different spreading factors to establish user data rate within a fixed chip rate of DSSS transmission and associated with TDD that allow single frequency for both transmitting and receiving, in which is taught by Miya et al.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Widegren et al. (US006374112B1) in view of Andersson et al (US006400966B1) and Miya et al (US006351458B2) as applied to claim 6 and 7 above, and further in view of Petch et al (US006243372B1).

Widegren et al., Andersson et al, and Miya et al do not disclose those frames are dedicated to backhaul communication between base stations that communicate freely. Petch et al

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disclose frames over backhaul links between base stations. See figure 2, items 18 and column 7, lines 1-10, and lines 49-60. At the time the invention was made, it would have been obviously to a person of ordinary skill in the art to have the backhaul communication between base stations.

One of ordinary skill in the art would have been motivated to do this since the backhaul communication is fast and reliable for varying data rates of wireless communication system.

15. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Widegren et al. (US006374112B1) in view of Andersson et al (US006400966B1) and Miya et al (US006351458B2) as applied to claim 6 and 7 above, and further in view of Komara (US006370384B1).

Widegren et al., Andersson et al, and Miya et al do not disclose using directional antennas for increasing of data transmission rate and improving the quality of radio channel during backhaul communication. Komara discloses having directional antennas for backhaul communication to improve the quality of channel and high-gain during transmission. See column 6 and lines 54-64. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have directional antennas to improve the quality of channel. One of ordinary skill in the art would have been motivated to do this since directional antennas, especially narrow beam antennas, and have the advantage of minimizing interference between co-channels and adjacent channels.

16. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Widegren et al. (US006374112B1) in view of Andersson et al (US006400966B1) and Miya et al (US006351458B2) as applied to claim 6 above, and further in view of Secord et al (US006373831B1).

Widegren et al., Andersson et al, and Miya et al do not disclose high net data rates that have range of 1.5- 3.0 Mbps. Secord et al disclose 2 Mbps data rate that falls in the range of 1.5 - 3.0 Mbps. See column 1, and lines 23-34. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine Widegren et al., Andersson et al, and Miya et al with Secord et al. One of ordinary skill in the art would have been motivated to do this since data rates is varying with the providing frequency bandwidth. The large bandwidth has, the higher data rate gets.

17. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Widegren et al. (US006374112B1) in view of Andersson et al (US006400966B1) and Miya et al (US006351458B2) as applied to claim 6 above, and further in view of Secord et al (US006373831B1) and Wickman (US006047177A).

Widegren et al further teach the system uses a plurality of data bearer on a single frequency channel. See column 2, and lines 27-33 and lines 61-67.

Combination of Widegren et al., Andersson et al, and Miya do not disclose data rate between 1.5 and 3.0 Mbps and a cell size of 1.5-mile radius, with orthogonal downlink spreading codes for CDMA transmission, and successive interference cancellation or simultaneous uplink spreading codes.

Secord et al disclose 2 Mbps data rate that falls in the range of 1.5 - 3.0 Mbps. See column 1, and lines 23-34. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine Widegren et al., Andersson et al, and Miya et al with Secord et al. One of ordinary skill in the art would have been motivated to do this since

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data rates is varying with the providing frequency bandwidth. The large bandwidth has, the higher data rate gets.

Wickman discloses a cell of a radius of between 0.1-5km. See column 5 and line 42-65. At the time the invention was made, it would have been obvious a person of ordinary skill in the art to combine Widegren et al., Andersson et al, and Miya et al with Secord et al with Wickman. One of ordinary skill in the art would have been motivated to do this since it is all based on the design choice.

The examiner takes "Official Notice" of the fact that is notoriously well known in the art to have orthogonal downlink spreading codes for CDMA transmission, and simultaneous uplink spreading codes or successive interference cancellation, in order to distinct different users without any interference.

Therefore, it would have been obvious for one of ordinary skill in the art, at the time the invention was made, orthogonal downlink spreading codes for CDMA transmission, and simultaneous uplink spreading codes or successive interference cancellation with Widegren et al., Andersson et al, and Miya et al with Secord et al and Wickman such that different users can share the same frequency band without any interference.

18. Claim 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Widegren et al. (US006374112B1) in view of Petch et al (US006243372B1) and Komara (US006370384B1).

With respect to claim 16, Widegren et al disclose a cellular wireless Internet access system (see figure 1, items 14, 20, 24 and 30) including:

A plurality of cellular base stations for transmitting and receiving in a predetermined frequency band using CDMA; at least one of base stations have access to the Internet or Intranets (see figure 1, column 2, line 39-44, column 6, and line 1-21).

A plurality of portable subscriber terminals, each located in a small geographical area related to a specific base station, subscriber terminals transmitting data to a base station in area, which must be connected to an Internet or Internets. (See figure 1, column 2, line 35-49, column 2, and lines 27-33).

Widegren et al do not disclose subscriber terminals transmitting data to a base station in area, which is backhauled and directional radio transmission that operating in same frequency band, and associated with each base station for routing backhaul data to a base station.

Petch et al disclose backhaul data over backhaul links between base stations. See figure 2, items 18 and column 7, lines 1-10, and lines 49-60. At the time the invention was made, it would have been obviously to a person of ordinary skill in the art to combine Widegren et al with Petch et al. One of ordinary skill in the art would have been motivated to do this since the backhaul communication is fast and reliable for varying high data rates of wireless communication system.

Komara discloses having directional antennas for backhaul communication to communicate with specific subscriber terminal in a narrow beam (frequency band). See column 6 and lines 54-64. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have directional antennas to improve the quality of channel. One of ordinary skill in the art would have been motivated to do this since directional antennas,

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especially narrow beam antennas, and have the advantage of minimizing interference between co-channels and adjacent channels.

With respect to claim 17, Komara further teaches a directional radio transmission including two separated base station radio transmitters and receiver units of the same type at each cell site one (see figure 1, items 12-1-1) of which communicates with said subscriber terminals (see figure 1, items 19-1) on its omni-directional antenna (see column 5, line 42) and another (see figure 1, and items 13-1-1) of which communicates with directional radio transmission to a base station (see figure 1, and items 14-1), and higher data transmission rates are permitted than between subscriber terminals and base station. See column 5, and lines 42-60. Since the communication between repeater and multi-channel host base station use backhaul communication that has very high bandwidth than between subscriber terminals and base station (repeater).

19. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over being unpatentable over Widegren et al. (US006374112B1), Petch et al (US006243372B1) and Komara (US006370384B1) as apply to claim 16 and in further view of Miya et al. (US006351458B2)

Komara further disclose directional radio transmission includes a common base station radio transmitter and receiver but with separate omni and directional antennas between antennas for communicating with subscriber terminals or exchange of backhaul traffic with other base stations and a means of increasing the transmission rates for backhaul data for such where the superior radio channel created by the use of such directional antennas permits high data transmission rates than between subscriber terminals and base station. See column 5, and lines

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42-60. Since the communication between repeater and multi-channel host base station use backhaul communication that handle multi-channels and has very high bandwidth than between subscriber terminals and base station (repeater).

Petch et al further disclose the system include TDD for allocating time slots during communication between base station and subscribers or other base stations. See column 6 and line 7-14.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Malmgren et al (US006334057B1) disclose channel allocation in a telecommunications system with asymmetric uplink and downlink traffic. Raychaudhuri et al. (US005684791A) disclose data link control protocols for wireless ATM access channels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuwen Pan whose telephone number is 703-305-7372. The examiner can normally be reached on 8-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on 702-305-4778. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

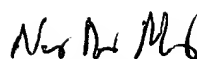
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Yuwen Pan

December 2, 2002


NAY MAUNG
PRIMARY EXAMINER